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[54] **POINTER-BASED COMPUTER SYSTEM CAPABLE OF ALIGNING GEOMETRIC FIGURES**

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Related U.S. Application Data

[63] Continuation of Ser. No. 180,559, Jan. 12, 1994, Pat. No. 5,452,371, which is a continuation-in-part of Ser. No. 1,122, Jan. 5, 1993, abandoned, which is a continuation-in-part of Ser. No. 889,216, May 27, 1992, abandoned, and Ser. No. 1,123, Jan. 5, 1993, abandoned.

[51] **Int. Cl.**[6] **G06K 9/00**

[52] **U.S. Cl.** **382/189**; 382/294

[58] **Field of Search** 382/173, 187, 382197, 199, 201, 202, 203, 224, 189, 175, 181, 186, 188, 190, 192, 195, 204, 205, 217, 282, 284, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 308, 309; 345/133, 179, 173, 156

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[57] **ABSTRACT**

An apparatus for recognizing shapes characterized by a stroke grouper receptive to a plurality of strokes formed on a screen of a pen-based computer system; a shape recognition engine receptive to a stroke group produced by the stroke grouper; and a knowledge base coupled to the shape recognition engine, where the knowledge base includes, at a minimum, knowledge concerning closed polygons and closed curves. Preferably, the closed curves of the knowledge base include both circles and ellipses. A method for recognizing digitized shapes in a computer system includes the steps of receiving at least one user-initiated stroke; grouping the user-initiated stroke with related strokes to